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FINAL ENVIRONMENTAL IMPACT STATEMENT

AMENDING AND ADOPTING THE

DRAFT ENVIRONMENTAL IMPACT STATEMENT

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BARRETTS MINERALS, INC.
REGAL LIFE-OF-MINE EXPANSION PLAN

February 2001

The Montana Department of Environmental Quality (DEQ) is adopting the Draft Environmental Impact Statement (EIS) for the proposed Regal Life-of-Mine Expansion Plan as the Final EIS as allowed under the Rules Implementing the Montana Environmental Policy Act (ARM 17.4.618). The following **Appendix D, Errata and Supplementary Information** is the result of changes necessary to respond to public comments on and agency review of the Draft EIS for the proposed Regal Life-of-Mine Expansion Plan. These changes are presented in this manner because of the relatively small number of changes. The bulk of the changes incorporate additional information about asbestiform fibers requested by the US Environmental Protection Agency (EPA) as well as water monitoring information requested by local ranchers. None of this information substantially changed the analysis. As a result, DEQ has selected the Agency Modifications to the Proposed Action as the preferred alternative.

Appendix E, Public Comments and Responses, contains a compilation of the comments received during the public comment period and the DEQ's responses to those comments.

Copies of the Final EIS can be obtained from:

Patrick Plantenberg
Montana Department of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901
Phone: (406) 444-4960 or e-mail: pplantenberg@state.mt.us

Copies of the Final EIS can be viewed at the following locations:

Montana Department of Environmental Quality, Helena, MT
The DEQ Web site: http://www.deq.state.mt.us
Western Montana College Library
Montana State Library

DATE DUE

APR 6 2004					

DEMCO 38-301

APPENDIX D TO DRAFT EIS

REGAL LIFE-OF-MINE EXPANSION PLAN

FINAL ENVIRONMENTAL IMPACT STATEMENT

ERRATA AND SUPPLEMENTARY INFORMATION APPENDIX

The Draft EIS is adopted as the Final EIS with the following changes:

Table of Contents: Add after **Appendix C: "Asbestiform Minerals Supplementary Information"**.

Page 2: The third paragraph of the **Agency Responsibilities** section should say: **"The Mine Health and Safety Administration (MSHA) is responsible for regulating and monitoring Regal Mine and Barretts Mill worker safety practices, including exposure to airborne dust."** The second sentence has been deleted.

Page 11: The first sentence of the **Power Consumption and Source** section should say: **"Power would be supplied by the three-phase overhead 12.5 kV powerline that originates from the Dillon substation and would include a design to protect perching hawks and eagles"**. Also the **"1/0 ACGR phase conductors**" statement near the bottom of page 11 should say **"1/0 ACSR phase conductors".**

Page 14: Modification 1 of the **Agency Modifications to the Proposed Action** section should say: **"Flow rate and water quality would be monitored weekly at these locations** [new springs or seeps] **until flow rate and quality are adequately assessed and DEQ agrees that the monitoring frequency can be reduced to monthly intervals. Results would be provided in the annual reports."**

Page 14: Modification 10 of the **Agency Modifications to the Proposed Action** section should say: **"BMI would submit an alternative design for DEQ, Madison County, and the landowner's review before the waste rock dump is expanded in the area of the public road, to move the Sweetwater Road to at least 50 feet from the pit to minimize the potential risks of trespass to the pit and the risk to public safety due to pit wall raveling (see Figure 2-2)."**

Page 40: DEQ has added a modification to the **Proposed Action** section to add continuous monitoring for the two creeks to help identify potential problems with stream flows. The following information would be added to page 40 to deal with the potential impacts to Carter and Hoffman Creeks: "DEQ would require BMI to implement continuous streamflow monitoring in Hoffman and Carter creeks to help identify potential impacts from pit dewatering on local stream flows. Monitoring information would be provided to DEQ in the annual water resources monitoring reports. A summary report would be provided

annually to the local ranchers who may be impacted by the flow data." This modification would be added to the **Record of Decision** as a stipulation to the Operating Permit 00013 Amendment approval.

Page 52: The Draft EIS language is modified on page 52 in the **Errata and Supplementary Information Appendix** in the Final EIS to include the following language:

"Analysis of 68 ore samples collected during operations in 1996 and 1997 was completed in house by Mineral Technologies Inc. using OSHA reference method 1910.1001. Samples were analyzed using X-ray diffraction (XRD) (to identify mineral content) and Transmission Electron Microscopy with Selected Area Electron Diffraction (SAED) and Energy Dispersive Spectroscopy (EDS) (to provide detailed information on the morphology and elemental chemistry of identified mineral fibers). Results showed no chrysotile above the XRD detection limit of 1 percent in any samples, and identified no fibrous minerals in 56 of 68 samples in TEM analyses. In 12 of the samples, where occasional fibers were observed in the TEM analyses at concentrations ranging between 1 and 25 fibers detected in 100 fields of view, additional more-detailed TEM analyses of mineral characteristics were completed by R J Lee Group, a third-party laboratory specializing in the analysis of fibrous minerals. The identified fibers were not asbestiform minerals (See Appendix C)."

Page 58: The end of the third paragraph of the **Compliance Issues and Regulation** section of the Draft EIS has been expanded to say. **"MSHA and OSHA occupational exposure levels for asbestos are not completely protective of human health. For example, OSHA's risk assessment for the standard of 0.1 fiber/cc showed that human health risk would be reduced, but there would still be significant risk. The excess cancer risk at that level would be 2.3 per 1000 workers for a 20-year exposure (*1994 Federal Register* 59 (153): 40978-82). The OSHA standard would have been lower, if based on some of the more conventional human risk bases such as one excess cancer per 100,000 people. DEQ believes that BMI is committed to the protection of human health and the environment, and DEQ will ensure that BMI will continue to monitor to evaluate its compliance with appropriate health protection standards."**

Page 58: The following text will be added to the **Compliance Issues and Regulation** section on page 58 in the Draft EIS: **"Risk of respiratory illness associated with exposure to asbestiform minerals is affected by several factors, including fiber type (chrysotile vs. amphibole asbestos), fiber diameter, fiber length, smoking, and exposure concentrations and duration."**

Page 62: The following text will be added to the **Health and Safety Plan** discussion for operational monitoring of air on page 62 of the Draft EIS: **"BMI is committed to conducting monitoring of airborne fibers during operations, for all personnel involved in mining operations in PAR zones. Air monitoring will be conducted for all personnel initially to identify exposure by work task, using NIOSH Method 7400**

with Phase Contrast Microscopy (PCM) for total fibers. Results will be confirmed by TEM in the event that the personal exposure level (PEL) of 2 fibers/cc of air (for an 8 hours time-weighted average (TWA)) is exceeded. If the PEL is exceeded, work activities will be re-evaluated with potential changes being made to engineering controls and/or work practices to further minimize exposures. If two consecutive sampling episodes (8-hr TWA and 30-minute duration during peak potential exposure) indicate that exposures are below PEL, sampling will be reduced to once a week until operations in the PAR zone are discontinued. If conditions change, continuous monitoring will be resumed. In the event that elevated fiber levels are detected in the operational PAR zone, the air monitoring plan may be expanded to include site perimeter monitoring to assess airborne fiber levels in ambient air".

Appendix C: Add the title: **"Asbestiform Minerals Supplementary Information".**

Appendix C: Add two new appendices to **Appendix C**, see attached Memo from Lisa Kirk, Maxim Technologies Inc. to Laura Kuzel, DEQ, dated March 31, 2000 and electronic mail from Gary Tomaino, Mineral Technologies Inc. to Lisa Kirk dated February 5, 2000.

MAXIM
TECHNOLOGIES INC®

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Suite B3A
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DEPT. ENVIRONMENTAL QUALITY

MEMORANDUM

To: Laura Kuzel, MT DEQ
From: Lisa Bithell Kirk, Sr. Geochemist LBK
Date: 31 March 2000
Re: Mineralogic Analysis of Regal Mine Ore Samples

CC: John Parks
Darin Lindsay
Gary Tomaino

Montana DEQ has requested that Barretts Minerals provide clarification of the mineralogy results presented in Appendix A of the waste rock geochemistry study report completed by Maxim Technologies in 1998. The appendix includes one set of data (ref LOG 04531) summarizing XRD analysis of 14 core drilling composite samples, which was completed by the Mineral Technologies Inc. research testing group in March of 1996. Results indicate the presence of talc, chlorite, and quartz in all samples, with calcite, pyrite, dolomite, and rutile/microcline in some samples. No magnesite, apatite, micas, montmorillonite, or kaolinite were reported. With respect asbestiform mineralization, no detection of Chrysotile or tremolite, at detection limits of 1 and 0.5%, respectively. These results are based solely on XRD analysis, following the analysis protocol described below.

A second set of data (LOG 06544) is also presented, which involved XRD, TEM, and relative color analysis of 54 blast hole samples of ore from the regal mine. The results of XRD analysis show talc, with chlorite, dolomite, quartz, and in a few cases, calcite. Chrysotile was not documented above the detection limit of 1 percent in any samples. Following XRD analysis, TEM/SAED analysis was also completed. Together, these analytical methods have shown the absence of asbestiform fibers in a majority of samples, with between 1 and 25 fibers being detected in 100 fields of view in the TEM analysis for a small number of samples. This analysis is based on the protocol described below, which was implemented using the OSHA reference method 1910.1001.

In general, the Mineral Technologies laboratory uses X-Ray Diffraction methods to identify the mineral content of a specimen. Detailed information on the morphology and elemental chemistry of a mineral fiber is collected using Transmission Electron Microscopy (TEM) with Selected Area Electron Diffraction (SAED) and Energy Dispersive Spectroscopy (EDS). Mr. Gary Tomaino of Mineral Technologies has provided the attached description of their routine process of asbestiform mineral characterization.

To further evaluate the asbestiform characteristics of the identified fibers (LOG 06544), Mineral Technologies laboratory had R J Lee Group conduct independent TEM analysis. The identified fibers were not consistent with asbestos. A memo from Gary Tomaino summarizing these test results is also provided.

Please contact me with any questions you may have concerning these mineralogy results.

"Providing Cost-Effective Solutions to Clients Nationwide"

Maxim Technologies, 1998. Barretts Minerals Inc. Regal Mine Waste Rock Geochemical Evaluation. A report prepared for Barretts Minerals, June 23, 1998, 19 pp.

Minerals Technologies, Inc./SMI, 1997. Internal References Document. Asbestos Analysis Procedure. Prepared by Lilya Noskov for the Analytical Services Group of Specialty Minerals, Inc. (note: this internal document was prepared by a consultant with coordination of the project and samples by Gary P. Tomaino.)

Tomaino, G.P., 1996. XRD Testing Results for 14 Regal Core Drilling Composite Samples, unpublished confidential memorandum, 5 pp.

Tomaino, G.P, 1997. XRD Testing Results for 54 Regal Mine 6440-4 Blast Hole Samples, unpublished confidential memorandum, 17 pp.

From: Gary.Tomaino@mineralstech.com
To: lkirk@avicom.net
Cc: Darin.Lindsey@mineralstech.com; John.Parks@mineralstech.com; Mike.Larson@mineralstech.com; Thomas.Christopher@mineralstech.com
Subject: information for sample preparation and testing
Date: Saturday, February 05, 2000 8:14 AM

Lisa,

attached is a file specific to XRD and TEM testing.

Sample preparation of a incoming material:

1)If the material is > 1", we would crush the material down to < 1/4" for additional bico grinding (ceramic plates that usually are set to provide at least a 100 mesh or finer material). In most cases we would crush all of the material that has been sent for analysis. This would eliminate any bias on additional sample preparation and the future testing. Visual observations of the material will be noted as necessary before and after the crushing such as a relative degree of liberation of mineral phases.

2) If the material is already or has been bico pulverized to at least 60-150 mesh or finer, a "line sampling" will be used to provide a three dimensional cut of all the bico material. When the bico material is greater than 100 grams, the line sampling may include several preparations. The first line sample increments are mixed to form a sub-composite that will be line sampled again and these increments composited. It is usually recommended that at least 10 if not 30 increments are taken from each line sampling.

3) At this point in the sample preparation, the XRD analysis can not proceed until there is some additional milling. A 10 gram sample is taken from the final line sample. This 10 gram sample is placed into a tungsten carbide puck mill and milled for a total of 3 minutes using 1 and 1/2 minute increments. After the first, 1 and 1/2 minute increment, the material in the puck mill is mixed to prevent compaction that may occur. This sample preparation should provide a material that is < 45 micron (-325 mesh) if not < 20 microns (< 635 mesh) . It is important to note that differences in the mineral composition may cause slight alterations to the preparation's milling time based on the hardness of a specific mineral(s) present. The specimen could actually be analyzed several times under varying milling conditions to note differences in the qualitative phase identifications.

4) The microscopy specimen can be taken from the bico material as well as from the XRD preparation. The Serpentine minerals (especially Chrysotile)can be affected by the degree of grinding/milling. The Amphibole minerals are more stable than the Serpentine minerals. However, the Amphiboles, non-asbestiform varities can generate additional cleavage fragments depending upon the degree of milling. Therefore, we may evaluate a specimen after varying milling conditions on an as needed basis.

5) XRD phase identificatoin, semi-quantitative estimates, or quantification of the regulated mineral(s) is dependent upon known interferences and the level of the contamination. The quantification could range from as low as < 0.2% up to 1% depending on the mineral phase composition for that specific sample.

X-Ray Diffraction (XRD) Analysis:
XRD analysis is a specialized method for examining the fundamental structural properties of crystalline materials. Since the diffraction pattern of a specimen is dependent upon its atomic structure, the pattern is generally unique to that mineral.

A general scan of the sample is always needed for phase identification, especially for those phases that may have overlapping peaks with the regulated minerals. The general scan parameters are from 3° to 75° 2θ, 0.02°2θ steps, and 2 seconds count time per step. Divergence slits are a 1° 2θ and receiving slits at 0.15°2θ. The instrument uses CuKα radiation with a curved graphite beam monochromator and a scintillation counter detector. Tube current is at 38 mA and tube potential is at 48 mA.

If interfering phases are **not** present, qualitative and quantitative determination for Chrysotile at the 7.3 A and 3.65 A peaks and/or for Actinolite/Tremolite/Anthophyllite at the 8.5-8.2 A peak are evaluated for the Talc specimen. Standard calibration curves should be and are made in a similar matrix as that of the specimen being analyzed. The abestiform mineral standards (Chrysotile and Actinolite, Tremolite, or Anthophyllite) should be as pure as possible. The parameters for quantification should profile the designated peak(s) noted above using 0.02° 2θ step and 100 second count time per step. The long count time provides well-defined peak to background noise resolution.

Chrysotile has major diffraction peaks at the 7.3 A and 3.65 A. A partial interference from Chlorite peaks at 7.15A and 3.55 A can occur in specific Talc materials. One of the major diffraction peaks at 3.12A for Actinolite and Tremolite overlaps with the one of the Talc's major diffraction peaks at 3.12 A. Other Actinolite and Tremolite peaks at 2.9 A and 3.38A can be used if other phases are not overlapping with these peaks. As for Anthophyllite additional peaks can be used at 3.23 A and 3.04 A as long as other overlapping peaks are not present.

When direct or partial overlapping occur, a method of additions or high resolution analysis can be used for the quantification. The high-resolution analysis can use 0.01° 2θ step, 100 second count time per step, and 0.018° receiving slits.

TEM/SAED/EDS

A good dispersion is required for high, quality transmission electron micrograph of powdered samples. Dried powders are placed into a culture tube, and a viscous, oily solution known as Twitchell's solution is added until the sample is wetted out. The culture tube is agitated in an ultra-sonic bath for 1-2 minutes. Hexane is then added to the culture tube while it is being agitated. This mixing of the dispersion liberates the fibers from the larger talc particles. Three drops of the thin suspension is applied to coated 150 mesh Cu grids that have been placed onto a piece of lens or tissue paper. After the grids are dry, transfer the grid to a box and record position of speciment. In the TEM, examine 10 grid openings at 3, 000X. The fiber definition is as follows: aspect ratio of greater than 3:1 length ≥ 5 μ, and parallel sides.

When a fiber is detected, additional testing using EDS (elemental) and SAED (selected area electron diffraction) analyses should follow to eliminate non-regulated fiber morphologies such as fibrous talc or palygorskite. If for some reason there are still questionable results, the sample should be prepared again, or sent to an outside contract laboratory (RJ Lee Inc.) for additional confirmation. The data is reported as # fibers/100 fields of view.

(As noted above in the XRD section, internal reference standards (pure asbestiform minerals and/or Talc samples spiked with a known level of an asbestiform mineral can and are used when appropriate.)

February 5, 2000

To: Lisa B. Kirk, M.S., P.G.
Senior Geochemist
Maxim Technologies Inc.
406-582-8780, fax-406-582-8790
lkirk@avicom.net

From: Gary P. Tomaino-Minerals Technologies Inc.
RE: Guidelines for Determination of Asbestiform Minerals in Talc

Alice,

Attached is an overview of the analytical techniques (XRD and TEM/SAED/EDS) that are used in the determination of asbestiform minerals in Barretts Talc.

The XRD analysis will determine total mineral content of a specimen. In most cases, the XRD analysis will not discriminate between the presence of the asbestiform or non-asbestiform forms of the specific mineral. TEM analysis will provide a very discrete evaluation on single or bundles of suspect fiber morphology.

Two main groups of asbestiform or non-asbestiform minerals are Serpentine and Amphibole.

Asbestiform:
- In the serpentine group-Chrysotile
- In the amphibole group- Actinolite, Tremolite, Anthophyllite

Non-asbestiform:
- In the serpentine group-Antigorite, Lizardite
- In the amphibole group- Actinolite, Tremolite, Anthophyllite

If there are any questions with this overview of testing, please call me.

Gary P. Tomaino
Analytical Services Group-Group Leader
610-250-3001, fax 610-250-3206
Gary.Tomaino@mineralstech.com

regalpermitfeb4.doc

April 5, 2000

To: Lisa Kirk-Maxim
From: Gary P. Tomaino-MTI/SMI

Re: Characterization of 06544-00020 (Regal 6440-4, drill hole #313) and Comments on usage of number of fibers/100 F.O.V. in evaluation of materials.

Lisa,

Background/Comments:

1) During April 1997, specific drill hole samples from the Regal 6440-4 campaign (reference LV 06544) contained suspect fibrous material that could not be eliminated as fibrous talc. Therefore, sample #313 was sent out for additional analysis to confirm or deny a regulated asbestiform mineral. The specific drill hole sample sent to the outside laboratory was 06544-00020 (#313). Our general TEM analysis at that time indicated that this sample contained 25 fibers/100 F.O.V. and was the highest among other drill hole samples with similar suspect fibrous material.

2) Attached you will find a report from RJ Lee Group (job no. ATH707459) with reference to sample 06544-00020 (cross-reference to Regal 6440-4, drill hole #313).

   ****RJ Lee Group confirmed that the fibers detected were NOT consistent with asbestos.****

   Therefore, we concluded, at that time, the other suspect fibrous material containing samples also were not consistent with asbestos.

Background/Comments:

1) In the past (mid-70's to early 80's), our laboratory had tried to relate the number of fibers detected/100 F.O.V. to a fibrous weight percentage in various in-process and final product materials. However, our efforts were deemed not successful because of too uniform a fiber morphology and size for the various standards used with respect to the non-uniform morphology and size in our real world materials. Also, we were not confident that a weight percentage number from a curve could be precisely and accurately correlated to an airborne volume number.

2) Therefore, we continued to provide a combination of XRD and TEM internally and STEM/SAED externally for characterization of specific in-process and specific final products. Up to December 1997, we would use an outside laboratory, specifically the RJ Lee Group, for confirmation of suspect fibrous mineral content with STEM/SAED.

GPTMaximRegal2000.doc

April 5, 2000

To: Lisa Kirk-Maxim

From: Gary P. Tomaino-MTI/SMI

Re: Characterization of 06544-00020 (Regal 6440-4, drill hole #313) and Comments on usage of number of fibers/100 F.O.V. in evaluation of materials.

Background/Comments:

3) By the end of December 1997, we had: 1) up graded our TEM capabilities for elemental and SAED, 2) brought in a consultant with many years of mineralogy and asbestos analysis, and 3) under my coordination set-up a general procedure for characterization of fibrous material using STEM/SAED.

At this time, we continue to evaluate specific in-process and specific final products for regulated asbestiform mineral content using the combined techniques of XRD and STEM/SAED. Again, if questions or uncertainties arise, we would send the sample to an outside laboratory, RJ Lee Group, for additional confirmation of our findings.

I hope this information is helpful to the MT DEQ and you in regards to the Regal Mine permitting.

If there are any questions, please call or email

Gary P. Tomaino

Gary P. Tomaino
Group Leader
Analytical Services Group-MTI/SMI

610-250-3001
Gary.Tomaino@mineralstech.com

GPTMaximRegal2000.doc

RJ Lee*Group*, Inc.

350 Hochberg Road • Monroeville, PA 15146
412/325-1776 • FAX 412/733-1799

4/5/2000 APT

August 7, 1997

LV 06544-00020
313

Mr. Fred Mebus
Specialty Minerals, Inc.
640 North 13th Street
Easton, PA 18042-1497

RE: TEM Asbestos Results for Samples 06544-00020 and 06937-00000
RJ Lee Group, Inc. Job No. ATH707459
Client Purchase Order No. EA50725

4/5/2000 APT

Dear Mr. Mebus:

As per your request, the above reference samples were analyzed for asbestos fibers using transmission electron microscopy (TEM). The samples were provided by Specialty Minerals, Inc. personnel. The observed fibrous material was not consistent with asbestos.

A portion of the as-received material was placed in a disposable beaker containing distilled water and mildly sonicated for three (3) minutes. The suspension was then redeposited on a polycarbonate having a 0.2 µm pore size.

Sample preparation for the TEM analysis involved directly coating the filter with a thin layer of carbon by evaporative deposition under vacuum. Several 200 mesh copper TEM grids containing approximately 2 mm^2 of filter were prepared by dissolving the filter media with chloroform resulting in a thin carbon film containing the particulate.

The analysis for asbestos structures consists of fiber morphology, visual selected area electron diffraction (SAED) and elemental chemical analysis by energy dispersive spectroscopy (EDS), supplemented by the measurement and interpretation of micrographs of several selected area electron diffraction patterns (SAED).

RJ Lee Group, Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for selected test methods for airborne asbestos fiber analysis (TEM), asbestos fiber analysis (PLM), New York State Department of Health Environmental Laboratory Approval Program (ELAP), and by the American Industrial Hygiene Association (AIHA). NVLAP accreditation does not imply endorsement by NVLAP or any agency of the U.S. Government.

Mr. Fred Mebus
Specialty Minerals, Inc.
ATH707459
August 7, 1997

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of thirty (30) days before discarding. A shipping and handling fee will be assessed for the return of any samples.

If you have any questions, feel free to call Kim Allison or me.

Very truly yours,

George R Dunmyre

George R. Dunmyre
Manager - TEM Analysis

GRD/slb

Enclosures

DISCLAIMER NOTES

General Notes for PLM Analyses

- "-" or "ND(1)" indicates no asbestos was detected; the method detection limit is "<1".
- "Trace" or "<1" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit of 1%.
- All regulated asbestos minerals (i.e., chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite) were sought in each sample, but only those asbestos minerals detected are listed. Amosite is the common name used for the asbestiform variety of the minerals cummingtonite and grunerite. Crocidolite is the common name used for the asbestiform variety of the mineral riebeckite.
- PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 1% to 0.1 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- Tile, vinyl, foam, plastic and fine powder samples may contain asbestos fibers of such small diameter that these fibers cannot be detected by PLM. For such samples, more sensitive analytical methods (e.g. TEM, SEM, XRD) are recommended if greater certainty about asbestos content is required.
- Separate components is a sample are combined in proportion to their abundance and a single analytical result provided for each sample.

General Notes for TEM Analyses

- The asbestos minerals sought in each sample include chrysotile (clinochrysotile, orthochrysotile, and parachrysotile), amosite (asbestiform grunerite and cummingtonite), crocidolite (asbestiform riebeckite), anthophyllite, tremolite and actinolite. Names given in parentheses indicate the proper mineralogical term for asbestos varieties known by an imprecise name. Definitions used for the amphiboles are those of the International Mineralogical Association, 1978.
- Asbestos structures include fibers, bundles, clusters, and matrices. See definitions in EPA's TEM method.
- The detection limit is defined as one structure counted in the filter area analyzed.
- Air volumes provided by the client were used to calculate airborne concentrations and analytical sensitivities.
- TEM coefficients of variance range from approximately 1.8 near the detection limit to 0.1 at high fiber concentrations.

Notes Required by NVLAP

- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP-approved signatory.
- Any reproduction of this document must include the entire document in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP or any agency of the U. S. Government.

Notes Required by NY ELAP

- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."

Request Number: .0711
Requestor: S MCDONALD BMI BAR QA 4P230

LIMS Sample ID	06544-00015	06544-00016	06544-00017
Notebook ID	0	0	0
Sample Type	TALC REGAL HOLE 308 6440-4	TALC REGAL HOLE 309 6440-4	TALC REGAL HOLE 310 6440-4
Location Code	MTIBARD	MTIBARD	MTIBARD
Company	MTI	MTI	MTI
Location	DILLON MT	DILLON MT	DILLON MT
Plant	BARRETTS	BARRETTS	BARRETTS
Login Date	04/13/97	04/13/97	04/13/97
Due Date	05/06/97	05/06/97	05/06/97
Complete Date	05/13/97	05/13/97	05/13/97
Priority	1	1	1

4/5/2000 KPT *

LIMS Sample ID	06544-00018	06544-00019	06544-00020
Notebook ID	0	0	0
Sample Type	TALC REGAL HOLE 311 6440-4	TALC REGAL HOLE 312 6440-4	TALC REGAL HOLE 313 6440-4
Location Code	MTIBARD	MTIBARD	MTIBARD
Company	MTI	MTI	MTI
Location	DILLON MT	DILLON MT	DILLON MT
Plant	BARRETTS	BARRETTS	BARRETTS
Login Date	04/13/97	04/13/97	04/13/97
Due Date	05/06/97	05/06/97	05/06/97
Complete Date	05/13/97	05/13/97	05/13/97
Priority	1	1	1

LIMS Sample ID	06544-00021	06544-00022	06544-00023
Notebook ID	0	0	0
Sample Type	TALC REGAL HOLE 314 6440-4	TALC REGAL HOLE 315 6440-4	TALC REGAL HOLE 316 6440-4
Location Code	MTIBARD	MTIBARD	MTIBARD
Company	MTI	MTI	MTI
Location	DILLON MT	DILLON MT	DILLON MT
Plant	BARRETTS	BARRETTS	BARRETTS
Login Date	04/13/97	04/13/97	04/13/97
Due Date	05/06/97	05/06/97	05/06/97
Complete Date	05/13/97	05/20/97	05/20/97
Priority	1	1	1

OG 06544]

CONCLUSIONS (cont'd)

XRD Analysis: crystalline phase identification **estimates**

Regal Blast Holes 6440-4

	#313	#314	#315	#316
Talc	35-40	35-45	73-79	67-73
Magnesiohornblende(1) or Actinolite/ Tremolite-sodian	4-7	1-2	nd<0.5	nd< 0.5
Chlorite	15-20	25-30	20-25	25-30
α-Quartz	4-7	2-4	1-2	1-2
Dolomite	20-25	20-25	nd<0.3	≤ 0.5
Magnesite	nd< 0.3	nd< 0.3	nd< 0.3	nd< 0.3
Calcite	4-7	4-7	nd< 0.5	nd< 0.5
Pyrite/Hematite	≤ 1?	nd< 1	nd< 1	nd< 1
Rutile/Microcline	≤ 0.5?	nd< 0.5	nd< 0.5	≤ 0.5?
Hydroxy/Fluorapatite	nd< 1	nd< 1	≤ 1?	nd< 1
Mica phases Muscovite Biotite Phlogopite	nd< 0.5	nd< 0.5	nd< 0.5	nd< 0.5
Albite/Anorthite	4-7	1-2	nd< 1	nd< 1
Montmorillonite	≤ 5?	nd< 1	nd< 1	nd< 1
Augite/Diopside	1-2	1-2	1-2	nd<0.5
Chrysotile/Antigorite	nd< 1	nd< 1	nd< 1	nd< 1
color-coarse material	light brown	brown	light brown	light brown
TEM fibers/100 F.O.V.	25	0	0	0

(1) Magnesiohornblende $(Ca,Na)_2(Mg,Fe)_5(Al,Si)_8O_{22}(OH,F)_2$
Actinolite $Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Tremolite-sodian $(Ca,Na)_2Mg_5Si_8O_{22}(OH)_2$

Graphite was not analyzed; please see cover letter to samples.

GPT

APPENDIX E TO DRAFT EIS

REGAL LIFE-OF-MINE EXPANSION PLAN

PUBLIC COMMENTS AND RESPONSES

On January 15, 2001, a Draft Environmental Impact Statement (EIS) for the Regal Life-of-Mine Expansion Plan was released for public review and comment. The Draft EIS was published on the DEQ Web site. Copies of this Final EIS are being provided to about 80 persons, groups, local governments and agencies that have expressed an interest in the Regal Life-of-Mine Expansion Project. The mailing list was compiled using the names and addresses of:

- Parties who participated in the public scoping meeting or submitted written comments;

- Parties who have requested copies of the EIS;

- Agencies, governments, and companies potentially affected by the proposed operations; and

- Agencies and groups consulted during EIS preparation.

- The following agencies, organizations, and individuals received a copy of the Draft EIS:

Federal, State and Local Agencies

- Montana Environmental Quality Council
- Montana Bureau of Mines & Geology
- Montana Department of Commerce,
  Building Codes Division
- Montana Department of Commerce,
  Hard Rock Mining Impact Board
- Montana Department of Environmental Quality,
  Air & Waste Management Bureau
- Montana Department of Environmental Quality,
  Water Protection Bureau
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources & Conservation,
  Water Rights Bureau
- Montana Department of Transportation

- Montana State Historic Preservation Office
- Montana State Library
- Montana Tech Library
- Office of the Governor
- USDI Bureau of Land Management, Butte Field Office
- USDI Bureau of Land Management, Dillon Field Office
- US Environmental Protection Agency, Denver Office
- US Environmental Protection Agency, Montana Office, Helena
- USDA Forest Service, Deerlodge National Forest
- Western Montana College, Carson Library

Federal, State and Local Officials

- Mayor of Dillon, George Warner
- Madison County Commissioner, William Doggett
- Beaverhead County Commissioner, Donna Sevalstad
- Beaverhead County Commissioner, Haugland, Garth
- Montana State Representative Debby Barrett
- Montana State Representative Rick Dale
- Montana State Representative Steven Gallus
- Montana State Representative Joe Quilici
- Montana State Representative Dianne Rice
- Montana State Senator Bill Tash
- US Representative Dennis R. Rehberg
- US Senator Max Baucus
- US Senator Conrad Burns

Individuals and Organizations

- Barretts Minerals, Inc.
- Benson, Ron
- Bradshaw, Pansy
- Brickle, Eldon
- Burns, Chuck
- Buus, Chuck
- Christensen, Art
- Clark Fork Coalition
- Center for Science in Public Participation (CSP^2), Jim Kuipers
- Cure

- Dillon Tribune, Elaine Spicer
- Erb, Calvin
- Golden Sunlight Mines, Inc.
- Gough, Shanahan, Waterman & Johnson
- Greater Yellowstone Coalition
- Hanson, John
- Helle, Tom
- Hydrometrics, Inc.
- Hyle, Chris
- Kirk, Lisa
- Konen, Cathy
- McCollum, John B.
- Miller, Holly
- Mineral Policy Center
- Montana Environmental Information Center, Jim Jensen
- Montana Mining Association
- Montana Resources, Inc.
- Montana Wilderness Association
- National Wildlife Federation, Tom France
- Northern Plains Resource Council, Louise Bruce
- Roberts, Sheila
- Stansbury Holdings Corporation
- Sullivan, Beth
- Thomas, Rob
- Vigilante Electric Co-Op, Inc.

To reach other parties that might be interested in the project and that were not on the mailing list, a press release was mailed out on December 20, 2000 and again on January 4, 2001. The press release was faxed to the Dillon Tribune, Montana Standard and Associated Press and sent out electronically on the State of Montana's NewsLinks service, which is available free to any subscribers. The press release was published in the Dillon Tribune on January 10, 2001. The press release announced the issuance of the Draft EIS and announced an open house and formal public hearing to be held in Dillon on January 11, 2001, at Western Montana College. DEQ solicited public comments on the environmental analysis contained in the Draft EIS with the formal public comment period ending on January 20, 2001. Public comments were taken until February 13, 2001.

The Dillon radio station was notified about the hearing on January 4, 2001. Twenty-eight people attended the public hearing and three people formally commented on the Regal Life-of-Mine Expansion Plan. Eight letters were received during the public comment period. Some of the replies simply endorsed the project while others contained more

specific comments on portions of the Draft EIS or requested further information. The only commentor that was not local was the EPA office in Denver, CO.

The following section provides DEQ's responses to substantive public comments on the Draft EIS. The comments have been condensed from the letters received on the Draft EIS. The Public Comment is in the left column. DEQ's response is in the right column. The public comment letters are printed in their entirety after the comments and responses.

Public Comments	**DEQ's Response**
Lynda Saul (DEQ Wetland Coordinator) - Just saw the Newslink posting about the Barretts project. It mentions creating a "pit lake" with the dewatered groundwater. I don't know the area or amount/quality of water, but is there any opportunity to create a wetland instead? Thanks.	In the **Agency Modifications to the Proposed Action** listed on page 40 of the Draft EIS, DEQ would require BMI to submit a final design for the final pit access ramp. The ramp would be sloped at 8 percent in the zone of pit lake water level fluctuation to maximize the littoral zone (the zone between the high and low water marks) available in the post-mine lake. A large littoral zone along this ramp would enhance aquatic habitat by providing shallow areas in the relatively small deep lake. This would be the only opportunity to create anything close to a wetland in the pit area.
Vigilante Electric Cooperative Inc. (Rod McRae) - Vigilante Electric wishes to comment on statements contained on page 11 under **Power Consumption and Source**. Power is to be supplied from the Dillon substation, not the East Bench Station. The conductor type is 1/0 ACSR, not 1/0 AGSR. The powerline needs to remain after mine life due to other customers on the line. These customers are presently served by Vigilante and do not wish to lose their electric service.	An **Errata and Supplementary Information Appendix** has been issued in the Final EIS, to correct the first sentence of the **Power Consumption and Source** section to say **"Power would be supplied by the three-phase overhead 12.5 kV powerline that originates from the Dillon substation."** Also the **"1/0 ACGR"** statement is corrected to **"1/0 ACSR".** The powerline would not be reclaimed at the end of mine life to provide other customers with continuing power supplies.
Barretts Minerals Inc. (John C. Parks) - Reference: **Chapter 1 Introduction, Agency Responsibilities**, Page 2: Comment: The reference to the	The page 2, **Agency Responsibilities** section has been corrected in the **Errata and Supplementary Information Appendix** in the Final EIS to say **"The Mine Health and**

Occupational Safety and Health Administration being responsible for worker health and safety is inaccurate. The Mine Safety and Health Administration is responsible for regulating federal health and safety standards at the Barretts Mill as well as the Regal Mine.	**Safety Administration (MSHA) is responsible for regulating and monitoring the Regal Mine and Barretts Mill worker safety practices, including exposure to airborne dust."**
Reference: **Chapter 2 Alternatives**, page 14, **Agency Modifications to the Proposed Action; #** 1, and all subsequent references: Comment: We recommend a flow rate and water quality monitoring frequency of monthly. This frequency conforms to the current proposed monitoring program. Weekly monitoring would result in a significant increase in sampling frequency and analytical costs while not providing additional information necessary to protect the resource.	If springs develop at the percolation basins, weekly monitoring will be needed to characterize the flow and quality of the discharge. After these parameters stabilize, the frequency of monitoring could be rolled back to monthly. Modification 1 on page 14 has been changed in the **Errata and Supplementary Information Appendix** in the Final EIS to say **"Flow rate and water quality would be monitored weekly at these locations** [new springs or seeps] **until flow rate and quality are adequately assessed and DEQ agrees that the monitoring frequency can be reduced to monthly intervals."**
Reference: **Chapter 2 Alternatives**, page 14, **Agency Modifications to the Proposed Action**; # 5: Comment: We agree in concept with utilizing pit sump water to irrigate revegetated areas and wish to evaluate the feasibility of doing so. However, we are unclear if this practice would be considered a beneficial use and require a water right? We would support this practice if limited to irrigating during periods when advantageous to plant establishment and sustainability rather than simply increasing biomass production.	DEQ agrees with the comment. The purpose of the proposed modification would be to utilize nitrates in the pit sump water to aid revegetation establishment and sustainability but also to reduce potential impacts to groundwater or surface water at the percolation ponds. DEQ placed a limit on the amount and season of use to prevent impacts to other water users and to limit the need for a water right.
Reference: **Chapter 2 Alternatives**, page 14, **Agency Modifications to the Proposed Action**; # 10: Comment: This modification infers the waste rock dump does not currently exist. This is not the case. We recommend replacing the word "developed" with, "expanded in the area	DEQ agrees with the comment. Page 14 would be modified in the **Errata and Supplementary Information Appendix** in the Final EIS to say "expanded in the area of the public road."

of the public road".	
USEPA (Dana B. Allen) - The Environmental Protection Agency (EPA)-Region 8 has reviewed portions of the Draft Environmental Impact Statement for Barretts Minerals, Inc., Operating Permit No. 00013, Amendment 004, Regal Life-of-Mine Expansion Plan. EPA's review focused on the sections regarding asbestiform minerals. Page 52, last paragraph states **"No asbestiform minerals have been identified in the talc ore by BMI in 20 years of sampling."** The FEIS should disclose BMI's analytical techniques and the number of samples analyzed. For example, were the talc samples evaluated using largely visual methods or have some of the technologically advanced methods been used to confirm the absence of asbestiform minerals?	Two memos regarding ore analysis for asbestiform minerals from the Regal Mine Application for Life-of-Mine Expansion Plan have been added to the Draft EIS, **Appendix C** in the **Errata and Supplementary Information Appendix** in the Final EIS. These memos, to Laura Kuzel (DEQ) from Lisa Bithell Kirk Maxim Technologies Inc.) (31 March, 2000), and from Gary Tomaino to Lisa Kirk (February 5, 2000), explain that Mineral Technologies Inc. (parent company for Barretts Minerals Inc.) has an in-house laboratory. The company uses X-ray Diffraction (XRD), Transmission Electron Microscopy (TEM) with Selected Area Electron Diffraction (SAED) and Energy Dispersive Spectroscopy (EDS) to characterize the mineralogy, crystal morphology and elemental chemistry of their talc ore for asbestiform mineralization. The use of an in-house lab is encouraged by MSHA. BMI periodically sends their samples out for confirmation by a commercial lab. The Draft EIS language is modified on page 52 in the **Errata and Supplementary Information Appendix** in the Final EIS to include the following language: **"Analysis of 68 ore samples collected during operations in 1996 and 1997 was completed in house by Mineral Technologies Inc. using OSHA reference method 1910.1001. Samples were analyzed using X-ray diffraction (XRD) (to identify mineral content) and Transmission Electron Microscopy with Selected Area Electron Diffraction (SAED) and Energy Dispersive Spectroscopy (EDS) (to provide detailed information on the morphology and elemental chemistry of identified mineral fibers). Results showed no chrysotile above the XRD**

	detection limit of 1 percent in any samples, and identified no fibrous minerals in 56 of 68 samples in TEM analyses. In 12 of the samples, where occasional fibers were observed in the TEM analyses at concentrations ranging between 1 and 25 fibers detected in 100 fields of view, additional more-detailed TEM analyses of mineral characteristics were completed by R J Lee Group, a third-party laboratory specializing in the analysis of fibrous minerals. The identified fibers were not asbestiform minerals (See Appendix C).”
Health Risk Assessment from Asbestos In the **Compliance Issues & Regulation** section, page 58, it is important to disclose that these agencies' occupational exposure levels for asbestos are not completely protective of human health. For example, the OSHA's risk assessment for the standard of 0.1 fiber/cc showed that human health risk would be reduced, but there would still be significant risk. The excess cancer risk at that level would be 2.3 per 1000 workers for a twenty-year exposure (*1994 Federal Register* 59 (153): 40978-82). The OSHA standard would have been lower, if based on some of the more conventional human risk bases such as one excess cancer per 100,000 people.	Page 58: The end of the third paragraph of the **Compliance Issues and Regulation** section of the Draft EIS has been expanded to say. **“MSHA and OSHA occupational exposure levels for asbestos are not completely protective of human health. For example, OSHA's risk assessment for the standard of 0.1 fiber/cc showed that human health risk would be reduced, but there would still be significant risk. The excess cancer risk at that level would be 2.3 per 1000 workers for a 20-year exposure (*1994 Federal Register* 59 (153): 40978-82). The OSHA standard would have been lower, if based on some of the more conventional human risk bases such as one excess cancer per 100,000 people. DEQ believes that BMI is committed to the protection of human health and the environment, and DEQ will ensure that BMI will continue to monitor to evaluate its compliance with appropriate health protection standards.”**
Information should also be included which discloses the factors that affect risk from asbestos such as: fiber type (chrysotile vs. amphibole asbestos), fiber diameter, fiber length, smoking, and exposure concentrations and duration.	The following text is added to the **Compliance Issues and Regulation** section on page 58 in the Draft EIS as part of the **Errata and Supplementary Information Appendix** in the Final EIS:

	"Risk of respiratory illness associated with exposure to asbestiform minerals is affected by several factors, including fiber type (chrysotile vs. amphibole asbestos), fiber diameter, fiber length, smoking, and exposure concentrations and duration."
The EPA recommends that airborne monitoring for asbestos be conducted when removing overburdened near or containing potentially asbestiform rock (PAR). This monitoring will evaluate the success of the dust control measures and other practices for handling PAR.	The following text has been added to the **Health and Safety Plan** discussion on operational monitoring of air on page 62 of the Draft EIS and as part of the **Errata and Supplementary Information Appendix** in the Final EIS: **"BMI is committed to conducting monitoring of airborne fibers during operations, for all personnel involved in mining operations in PAR zones. Air monitoring will be conducted for all personnel initially to identify exposure by work task, using NIOSH Method 7400 with Phase Contrast Microscopy (PCM) for total fibers. Results will be confirmed by TEM in the event that the personal exposure level (PEL) of 2 fibers/cc of air (for an 8 hours time-weighted average (TWA)) is exceeded. If the PEL is exceeded, work activities will be re-evaluated with potential changes being made to engineering controls and/or work practices to further minimize exposures. If two consecutive sampling episodes (8-hr TWA and 30-minute duration during peak potential exposure) indicate that exposures are below PEL, sampling will be reduced to once a week until operations in the PAR zone are discontinued. If conditions change, continuous monitoring will be resumed. In the event that elevated fiber levels are detected in the operational PAR zone, the air monitoring plan may be expanded to include site perimeter monitoring to assess airborne fiber levels in ambient air".**

Calvin J. Erb (Attorney at Law) – representing John and Nancy McCollum We are presently in the process of reviewing the draft environmental impact statement, as well as contacting Barretts Minerals for the discussion concerning of how they intend to mitigate any reduction in the flow of Carter Creek. We would appreciate being involved in the process of permitting these wells. Some of the concerns that we believe need to be addressed before a permit can be issued are as follows: Who has the right to use the water from the wells and for what purposes. The draft environmental impact statement indicates that no action was taken concerning the water rights. It was determined that it would be eliminated from the study due to negotiations with the local water users. It was also indicated that BMI did not intend to put de-watering well water to beneficial use. It's our understanding that the well water will go into a settling pond and then to be disposed of in some fashion. The McCollums have water rights out of Carter Creek and this water may be necessary to supplement the Carter Creek water due to de-watering that may occur from the wells.	Groundwater will be removed by dewatering wells located adjacent to the mine pit (See page 9 and 10 and Figure 2-1 on page 8 of the Draft EIS). This water will be piped via a buried pipeline to a percolation basin(s) sited on the Christensen Ranch, and be allowed to return to the regional groundwater system through percolation (See Figure 3-1 on page 22 of the Draft EIS). This does not represent a "beneficial" use of the groundwater, and does not require that BMI obtain a groundwater water right for operation of the dewatering wells. Section 7.0 of the **Water Management Plan** included in the **Plan of Operations** for the Regal Mine provides a contingency plan should operation of the dewatering wells result in decreased flows in Hoffman Creek, Carter Creek, or nearby springs (Hydrometrics 2000a). If the monitoring of surface water flows required by the **Water Resource Monitoring Plan** determines that operation of the dewatering wells is adversely affecting the flow of any surface water resources, the **Water Management Plan** commits to directing a portion of the captured groundwater to these areas. If necessary, discharges of unaltered captured groundwater would be used to supplement and maintain flows reduced by the dewatering operations. The objective of using captured groundwater to supplement adversely affected surface water flows, however, is limited to replacing and maintaining flows at their pre-impact level, and does not propose using supplemental groundwater to increase flows above historic seasonal levels. Prior to implementing this contingency plan, BMI would consult with any affected water right parties, and DEQ to ensure that mitigation measures appropriate to resolving the impact are established.
In the event there is de-watering of Carter Creek, can the well water be deposited	Yes. Groundwater captured by the upgradient dewatering wells is anticipated to

directly into Carter Creek to supplement the flow?	be of good quality, and would likely qualify for a discharge permit under the Montana Pollutant Discharge Elimination System (MPDES) permit program, if a permit was required. The discharge to surface water of unaltered groundwater from the dewatering wells, however, is categorically exempt from the MPDES permit program.
How is the impact on Carter Creek from the wells and from the seepage into the pit to be monitored?	Water resources monitoring at the Regal Mine is detailed in the Regal **Mine Water Resources Monitoring Plan** (Hydrometrics 2000a). The flow in Carter Creek, as well as Hoffman Creek, will be monitored on a continuous basis (See response to the Benson letter comments below). These flow records would be analyzed to detect mining induced flow depletions not explained by local climate changes. Monitoring for impacts to Carter Creek would also include flow monitoring on springs, and tracking of the drawdown cone in monitoring wells.
In the event Carter Creek is impacted, what plan is in place to mitigate the damage?	See response to Erb comment #1. If streamflow in Carter Creek is depleted as a result of operation of the dewatering wells, streamflow will be supplemented by unaltered groundwater obtained from dewatering wells via a pipeline and discharge point. This plan is described in the **Water Resources Monitoring Plan** (Hydrometrics 2000a).
At the end of the life of the mine, the pit would fill with water. What is the impact on Carter Creek and what procedures are in place or will be in place to mitigate damage, i.e. increase evaporation thereby reducing the water available in Carter Creek?	Because of the relatively small size of the post-mine pit lake surface and depth of the pit lake, it is highly unlikely that evaporation of water from the pit lake could produce a measurable effect on the regional groundwater available for maintaining flows in Carter Creek. Water movement through the pit will be rapid enough to limit the potential for evaporation to create long-term water quality problems by concentrating certain parameters (See page 35 of the Draft EIS, **Cumulative Effects**).

The bond that will be required from BMI is used by the State for reclamation purposes. Can this bond also be used by private parties in the event that damage occurs to their property?	The bond does not cover the replacement of water at this time. The Metal Mine Reclamation Act requires replacement of groundwater supplies damaged as a result of mining activities (83-4-355, MCA). If an impact was identified in the future and a plan was implemented to replace the lost water supply the bond would be adjusted at that time to cover the cost of the water supply in case the mining company did not replace it. Damage to surface water supplies is a water rights issue and is not covered under the Metal Mine Reclamation Act.
The McCollums are also concerned about the disposal of water from the mine by crossing Carter Creek with a pipeline and depositing the water on a dry flat. It appears that the piping of the water to this place would serve no useful purpose and would only enhance the de-watering of Carter Creek. If a program is used to pump water from the Regal Mine and transport it, the McCollums believe it would be better to either transport it to an area that would eventually return to Carter Creek above their diversion point, or make allowances for the use of water by the McCollums in the event the Regal Mine project has an adverse impact on the flows of Carter Creek.	In response to the McCollums' concerns and in consultation with them, BMI changed the location of the percolation ponds to the east side of Carter Creek within the Carter Creek watershed.
Barretts Minerals, Inc. performed a synoptic stream flow monitoring program on Carter Creek and Hoffman Creek on July 21st, 1999. It appears that Barretts Minerals, Inc. is basing their anticipated impact on Carter Creek from these studies. You should note that an extended drought had been in place in Beaverhead County at this time, and measuring the flows on Carter Creek on July 21st, 1999 would only reflect the minimum flows in Carter Creek during a drought period. Therefore, it would not accurately	Because there is no historic record for flows in Carter Creek, BMI conducted a stream channel flow and stability assessment. This data along with continuous flow monitoring over the next several years will aid in determining potential mine-induced streamflow reductions.

reflect the average flows that would be in Carter Creek.	
Until Barretts Minerals, Inc. can satisfy the McCollum's concerns including: the piping of water across the Carter Creek drainage and the location of the settling ponds, that their water rights will be protected in Carter Creek, and that a contingency plan would be put in place to supply them with the water that may be depleted by pumping the Regal Mine, the McCollums would have an objection to the application for the amendment to the operating permit.	A contingency plan for augmenting depleted flows in Carter Creek is in the plan and discussed in **Appendix A** of the Draft EIS.
Ron and Marilyn Benson (Benson Ranch) The Barretts Minerals' Regal Expansion Mining Plan includes the process of the substantial lowering of the underground aquifer accomplished through a process of wells pumping and a following redistribution of the water into lakes. The resulting area of land that would be affected was determined by a computer-drawn projection, and knowing that affected areas are projections only; it is reasonable to assume that the actual areas to be affected by this draw down are unable to be exactly and scientifically determined. It is known that the removing of ground water can lower overall ground water levels as the cone of depression around these wells grow; and knowing that wells and springs near these areas have ceased and gone dry; we have great concerns and apprehensions for our operations and our future lifestyle. Due to our land's close proximity to the Regal Mine coupled with the fact that our entire ranching, living, and farming operations are solely dependent upon springs fed by the underground aquifers adjacent to the Regal Mine; we request that you have a qualified	The **Proposed Action Water Resources Monitoring Plan** (Hydrometrics 2000a) includes quarterly flow and water quality monitoring of springs (SP-2, SP-3) and Carter Creek site RMS-2. Impacts to water resources detected at these locations would serve as an early warning system for drawdown effects west of the pit. DEQ has added a modification to the **Proposed Action** to add continuous monitoring for the two creeks to help identify potential problems with stream flows. The following information has been added to page 40 in the **Errata and Supplementary Information Appendix** in the Final EIS to deal with the potential impacts to Carter and Hoffman Creeks: **"The agency would require BMI to implement continuous streamflow monitoring in Hoffman and Carter Creeks to help identify potential impacts from pit dewatering on local stream flows. Monitoring information would be provided to DEQ in the annual water resources monitoring reports. A report summarizing the flow data would be provided annually to the local ranchers who may be impacted".**

geological and hydrology expert visit our ranch and observe our land and its related lifestyle and operations in order to give us a professional opinion regarding the effects on our land and operations of the proposed intrusion and displacement of the underground aquifer beneath the Regal Mine.	A hydrologist from DEQ will be sent to the Benson Ranch to assess the magnitude of any possible impacts to springs in the area and to recommend if any of the Benson Ranch springs could possibly be impacted by Regal Mine operations and would need to be added to the monitoring program.
Madison County Board of Commissioners (Frank G. Nelson, Chairman) - We support the plan for the following reasons: We do not see the potential for significant environmental damage due to the project. The additional taxes, which would be paid Madison county by Barretts during the Life of the Mine Expansion, would be important to Madison County. The Expansion would be good for the depressed economy of southwest Montana and therefore Madison County.	Thank you for your comment. DEQ agrees with your conclusions.

PUBLIC TESTIMONY ON

DRAFT ENVIRONMENTAL IMPACT STATEMENT

FOR THE REGAL MINE/LIFE OF MINE EXPANSION

Public Hearing
Main Hall
Western Montana College
Dillon, MT
January 11, 2001

Garth Haugland, Chairman of the Beaverhead Board of County Commissioners

"I wish to speak in support of this expansion. Beaverhead County and Dillon are economically depressed. We are seeing continued erosion in our tax base, which allows the government to perform the services that people request. Barretts Minerals is the county's largest taxpayer at this point and depending upon whether the legislature cuts you a good deal or not on the next session, we have no control over that, but they provide a job that is a commensurate, it's a good job, you can make a living with a paycheck working for Barretts Minerals. They're an environmentally conscious company. They are mining a natural product that is used throughout the world. Their talc is used in catalytic converters, which have done a lot to clean the air up in the United States. They are not taking a mineral out of the ground that's of no value to anyone. The Barretts Minerals as a company has been very involved in the community. They originally started the United Way Fund that funds a great, great many volunteer organizations in this community and essentially I just wish to commend the management of Barretts for attempting to stay in business in a tough environment. There is nothing you can do about your energy costs right now, but that scares me a lot more than the fact your applying to expand your mining operation and trying to stay in business and be a good corporate neighbor to this community."

Curtis Owen, Contractor for Barretts Minerals Incorporated
Bennett Owen Trucking

"We have a company, which transports the talc from the mine to the plant and I want to speak in support of their Regal Expansion plan. I feel it is a good thing for Dillon and the community. Something that people may or may not realize is over and above the direct employees at Barretts Minerals there are contractors which fall into play. I employ anywhere from 8 to 15 people directly and the fallout is tremendous in Dillon from parts

stores all the way through. Everything is supportive in this town and I just feel that we should look at this in a realistic standpoint, as it's good for Dillon. They are a very environmentally friendly company. I have spoken with John Parks and many of the others all through this process and I think it is being done right."

George Warner, Mayor of Dillon

"On a professional level as Mayor of Dillon I would like to state that I have reviewed the document and especially find on, I think it is page 40, the Social Economics section is accurate and represents a true picture of what Barretts does provide to Beaverhead County. The tax implications are very much evident in this information on a professional and personal scenario I understand the need of Barretts Minerals in our community. I don't believe I would have been able to remain in Dillon for the past 22 years had the company not been able to stay in business and provide a good product to the national economy. I'd also like to pair at many of the things that Garth stated. He pretty much covered the issue. I also believe that Barretts provides approximately two-thirds of the money that goes to the United Way program and I think that although there has not been a study of that issue, I think you could see two-thirds of that money leaves this community, if not more than that, if Barretts was not able to sustain their operations. We do not have a replacement for them in the foreseeable future and they are very important to us."

FINAL ENVIRONMENTAL IMPACT STATEMENT

REGAL LIFE-OF-MINE EXPANSION PLAN

COMMENT LETTERS

00013

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VIGILANTE ELECTRIC COOPERATIVE, INC.

225 E. Bannack St.
P. O. Box 71
Dillon, MT 59725-0071

Telephone (406) 683-2327
Fax Number (406) 683-4328

January 10, 2001

RECEIVED

JAN 11 2000

[illegible]

MDEQ
Environmental Management Bureau
Attn: Greg Hallsten
PO Box 200901
Helena MT 59620-0901

Re: Comments on Regal Life-of-Mine Expansion Plan, Barretts Minerals Inc. Draft EIS, Operating Permit No. 00013 Amendment 004

Dear Greg:

Vigilante Electric wishes to comment on statements contained on page 11 under Power Consumption and Source.

Power is to be supplied from the Dillon Substation, not the East Bench Station. The conductor type is 1/0 ACSR, not 1/0 AGSR. The power line needs to remain after mine life due to other customers on the line. These customers are presently served by Vigilante and do not wish to lose their electric service.

Regards,

Rod McRae, P.E.
Engineering & Operations Manager

RM:lkm

00013

Barretts Minerals Inc.
8625 Highway 91 S.
Dillon, MT 59725
Tel: 406 683 3300
Fax: 406 683 3351

BVQi
ISO 9002

MINERALS
TECHNOLOGIES

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DEPT. ENVIRONMENTAL QUALITY

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23
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MT DEPT. OF ENVIRONMENTAL QUALITY
PERMITTING & COMPLIANCE DIV

January 19, 2001

Greg Hallsten
Montana Department of Environmental Quality
Environmental Management Bureau
PO Box 200901
Helena, Montana 59620-0901

Dear Mr. Hallsten

Barretts Minerals Inc. (BMI) appreciates this opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Barretts Minerals Inc. Regal Mine life-of-mine expansion plan. The following are our comments.

Reference: Chapter 1 Introduction, Agency Responsibilities, Page 2:

Comment: The reference to the Occupational Safety and Health Administration being responsible for worker health and safety is inaccurate. The Mine Safety and Health Administration is responsible for regulating federal health and safety standards at the Barretts Mill as well as the Regal Mine.

Reference: Chapter 2 Alternatives, page 14, Agency Modifications to the Proposed Action; # 1, and all subsequent references:

Comment: We recommend a flow rate and water quality monitoring frequency of monthly. This frequency conforms to the current proposed monitoring program. Weekly monitoring would result in a significant increase in sampling frequency and analytical costs while not providing additional information necessary to protect the resource.

Reference: Chapter 2 Alternatives, page 14, Agency Modifications to the Proposed Action; # 5:

Comment: We agree in concept with utilizing pit sump water to irrigate revegetated areas and wish to evaluate the feasibility of doing so. However, we are unclear if this practice would be considered a beneficial use and require a water right? We would support this practice if limited to irrigating during periods when advantageous to plant establishment and sustainability rather than simply increasing biomass production.

Reference: Chapter 2 Alternatives, page 14, Agency Modifications to the Proposed Action; # 10:

Comment: This modification infers the waste rock dump does not currently exist. This is not the case. We recommend replacing the word "developed" with, "expanded in the area of the public road".

Please call me at (406) 683-3336 if you have any questions or require clarification to our comments.

Sincerely,

John C. Parks
EH&S Manager

831
EPA comment letter on Regal

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
http://www.epa.gov/region08

January 29, 2001

Ref: 8EPR-EP

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DEPT. ENVIRONMENTAL QUALITY

Greg Hallsten
Environmental Management Bureau
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620 – 0901

Re: DEIS Regal Talc Mine Expansion
Barretts Minerals, Inc.

Dear Mr. Hallsten:

The Environmental Protection Agency (EPA) – Region 8 has reviewed portions of the *Draft Environmental Impact Statement for Barretts Minerals, Inc., Operating Permit No. 00013, Amendment 004, Regal Life-of-mine Expansion Plan.* EPA's review focused on the sections regarding asbestiform minerals.

1. Page 52, last paragraph states "No asbestiform minerals have been identified in the talc ore by BMI in 20 years of sampling." The FEIS should disclose BMI's analytical techniques and the number of samples analyzed. For example, were the talc samples evaluated using largely visual methods or have some of the more technologically advanced methods been used to confirm the absence of asbestiform minerals?

Health Risk Assessment from Asbestos

2. In the *Compliance Issues & Regulation Section*, page 58, it is important to disclose that these agencies' occupational exposure levels for asbestos are not completely protective of human health. For example, the OSHA's risk assessment for the standard of 0.1 fibers/cm^3 showed that human health risk would be reduced, but there would still be significant risk. The excess cancer risk at that level would be 2.3 per 1000 workers for a twenty-year exposure (*1994 Federal Register* 59 (153): 40978-82). The OSHA standard would have been lower, if based on some of the more conventional human risk bases such as one excess cancer per 100,000 people.

3. Information should also be included which discloses the factors that affect risk from asbestos such as: fiber type (chrysotile vs. amphibole asbestos), fiber diameter, fiber length, smoking, and exposure concentrations and duration.

Monitoring

4. We recommend that airborne monitoring for asbestos be conducted when removing overburdened near or containing potentially asbestiform rock (PAR). This monitoring will evaluate the success of the dust control measures and other practices for handling PAR.

Thank you for the opportunity to comment. If we can further explain our comments, please call me at (303) 312-6870.

Sincerely,

O/s/b

Dana B. Allen
Environmental Engineer
Ecosystems Protection and Remediation

cc: Steve Potts, EPA MT

CALVIN J. ERB
ATTORNEY AT LAW
134 EAST REEDER STREET
P.O. BOX 1172
DILLON, MONTANA 59725-1172

PHONE: (406) 683-6151 FAX: (406) 683-2282

January 21, 2000

Mr. Patrick Plantenberg
Acting Section Supervisor
Hard Rock Program
MDEQ
P.O. Box 200901
Helena, Montana 59620-0901

Re: McCollum

Dear Mr. Plantenberg:

John and Nancy McCollum requested that I submit their comments to you concerning the proposed Barretts Minerals Inc.'s Regal Mine expansion and water management plan.

The McCollums were contacted by representatives from Barretts Minerals, Inc. concerning their proposal and were provided with a copy of their water management plan. We have reviewed the proposed water management plan and believe it to be deficient in addressing several of the McCollum's concerns.

The McCollums are claiming first water rights on Carter Creek. Carter Creek is a naturally occurring stream in the area where Barretts Minerals, Inc. intends to expand the Regal Mine. Carter Creek relies on springs along its' course to maintain the stream. McCollums are very concerned about the proposed mine and its' impact on the aquifer that supplies the water for Carter Creek. The water management plan provided by Barretts Minerals, Inc. attempts to address this issue; however, it does not appear to adequately cover the contingencies that may occur. These contingencies include the de-watering of Carter Creek due to the pumping of water from the mine, and the basic hydrological impact that opening a mine of this depth may have on the entire aquifer in the area.

The McCollums are also concerned about the disposal of water from the mine by crossing Carter Creek with a pipeline and depositing the water on a dry flat. It appears that the piping of the water to this place would serve no useful purpose and would only enhance the de-watering of Carter Creek. If a program is used to pump water from the Regal Mine and transport it, the McCollums believe it would be better to either transport it to an area that would eventually return to Carter Creek above their diversion point, or

to make allowances for the use of water by the McCollums in the event the Regal Mine project has an adverse impact on the flows of Carter Creek.

Barretts Minerals, Inc. performed a synoptic stream-flow monitoring program on Carter Creek and Hoffman Creek on July 21st, 1999. It appears that Barretts Minerals, Inc. is basing their anticipated impact on Carter Creek from these studies. You should note that an extended drought had been in place in Beaverhead County at this time, and measuring the flows on Carter Creek on July 21st, 1999 would only reflect the minimum flows in Carter Creek during a drought period. Therefore, it would not accurately reflect the average flows that would be in Carter Creek.

Until Barretts Minerals, Inc. can satisfy the McCollum's concerns including: the piping of water across the Carter Creek drainage and the location of the settling ponds, that their water rights will be protected in Carter Creek, and that a contingency plan would be put in place to supply them with the water that may be depleted by pumping the Regal Mine, the McCollums would have an objection to the application for the amendment to the operating permit.

Please contact my office if you have any questions.

Sincerely,

Calvin J. Erb
Attorney At Law

Copy To:
John Parks
Barretts Minerals, Inc.
P.O. Box 1147
Dillon, MT 59725

CJE:ak

831

Copy to Warren
2-14-01

CALVIN J. ERB
ATTORNEY AT LAW
134 EAST REEDER STREET
P.O. BOX 1172
DILLON, MONTANA 59725-1172

PHONE: (406) 683-6151 FAX: (406) 683-2282

February 12, 2001

RECEIVED
FEB 13 2001
DEPT. ENVIRONMENTAL QUALITY

Mr. Warren McCullough
Dept. Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901
(406) 444-6791

Dear Mr. McCullough:

John and Nancy McCollum recently received a letter from the Department of Environmental Quality dated December 19, 2000. However, they did not receive the letter until approximately the 20th of January 2001. The letter outlined a time for written comments concerning the Regal Mine Expansion in Madison County.

The McCollums have previously written a letter to Mr. Patrick Plantenberg outlining their concerns. A copy of that letter is attached for your review. While we realize the comment period ended the 20th of January, we want to make sure you are aware that we have previously voiced our concern concerning the impact of the wells on the Carter Creek Drainage. The Carter Creek Drainage supplies stock and irrigation water for the McCollums.

We are presently in the process of reviewing the draft environmental impact statement, as well as contacting the Barretts Minerals for the discussion concerning of how they intend to mitigate any reduction in the flow of Carter Creek. We would appreciate being involved in the process of permitting these wells.

Some of the concerns that we believe need to be addressed before a permit can be issued are as follows:

1) Who has the right to use the water from the wells and for what purposes. The draft environmental impact statement indicates that no action was taken concerning the water rights. It was determined that it would be eliminated from the study due to negotiations with the local water users. It was also indicated that BMI did not intend to put de-watering well water to beneficial use. It's our understanding, the well water will go into a settling pond and then to be disposed of in some fashion. The McCollums have water rights out of Carter Creek and this water may be necessary to supplement the Carter Creek water due to de-watering that may occur

from the wells.

2) In the event there is de-watering of Carter Creek, can the well water be deposited directly into Carter Creek to supplement the flow?

3) How is the impact on Carter Creek from the wells and from the seepage into the pit to be monitored?

4) In the event Carter Creek is impacted, what plan is in place to mitigate the damage?

5) At the end of the life of the mine, the pit would fill with water. What is the impact on Carter Creek and what procedures are in place or will be in place to mitigate damage, i.e. increased evaporation thereby reducing the water available in Carter Creek?

6) The bond that will be required from BMI runs to the State for reclamation purposes. Can this bond also be used by private parties in the event that damage occurs to their property?

These are just a few of the questions that the McCollums would like to have addressed prior to the permit being issued. BMI has been visiting on a very sporadic basis with McCollums concerning their concerns with Carter Creek. We intend to go forward with our discussion with the appropriate parties from BMI and hopefully arrive at a satisfactory resolution to the McCollums concerns.

In the meantime, we would appreciate being involved in the process and the assistance from the Department in arriving at answers to our questions as well as solutions to the problems that we've identified.

Sincerely,

Calvin J. Erb
Attorney At Law

Encl: Ltr to Plantenberg dtd 1-21-00
cc: McCollums
John Parks
CJE:dlg

Benson Ranch Box 408 Dillon, MT. 59725

January 15, 2001

Montana Department of Environmental Quality
Environmental Management Bureau
P.O. Box 200901
Helena, MT. 597620-0901

Patrick Plantenberg:

As a neighbor of the Regal Mine of Barrett Minerals' operation, we attended the public meeting January 11, 2001. We submit this Comment Sheet for you consideration and records.

The Barrett Minerals' Regal Expansion Mining Plan includes the process of the substantial lowering of the underground aquifer accomplished through a process of wells pumping and a following redistribution of the water into lakes.

The resulting area of land that would be affected was determined by a computer-drawn projection, and knowing that affected areas are projections only; it is reasonable to assume that the actual areas to be affected by this draw down are unable to be exactly and scientifically determined.

It is known that the removing of ground water can lower overall ground water levels as the cone of depression around these wells grow; and knowing that wells and springs near these areas have ceased and gone dry; we have great concerns and apprehensions for our operations and our future lifestyle.

Due to our land's close proximity to the Regal Mine coupled with the fact that our entire ranching, living, and farming operations are solely dependent upon springs fed by the underground aquifers adjacent to the Regal Mine; we request that you have a qualified geological and hydro expert visit our ranch and observe our land and its related lifestyle and operations in order to give us a professional opinion regarding the effects on our land and operations of the proposed intrusion and displacement of the underground aquifer beneath the Regal Mine.

Sincerely,

Ronald A. Benson
Ronald A. Benson
Marilyn M Benson
Marilyn M. Benson
Cc Barrett Minerals, Inc
Cc Hydrometrics, Inc.

RECEIVED
JAN 17 2001
DEPT. ENVIRONMENTAL QUALITY

Madison County Board of Commissioners

Commissioners
C. Ted Coffman
Frank G. Nelson
David Schulz

PO Box 278,
Virginia City, MT 59755
e-mail: madco@3rivers.net

Phone: (406)843-4277
Fax: (406)843-5517

Warren
Permits

00013.831

RECEIVED
JAN 19 2001
DEQ

January 17, 2001

Ms. Jan P. Sensibaugh, Director
Montana Department of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

Dear Ms. Sensibaugh:

On behalf of the Madison County Commissioners I am writing this letter in support of Barretts Minerals Company Regal Life of Mine Expansion Plan. We support the plan for the following reasons:

1. We do not see the potential for significant environmental damage due to the project.
2. The additional taxes, which would be paid Madison County by Barretts during the Life of the Mine Expansion, would be important to Madison County.
3. The Expansion would be good for the depressed economy of Southwest Montana and therefore Madison County.

Sincerely,

Frank G. Nelson

Frank G. Nelson, Chairman
Board of Commissioners
Madison County

RECEIVED
JAN 22 2001
DEPT. ENVIRONMENTAL QUALITY

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING AND COMPLIANCE DIVISION

RECORD OF DECISION
for
Barretts Minerals Inc.
Operating Permit No. 00013
Amendment 004
Regal Life-of-Mine Expansion Plan
March 15, 2001

I. Introduction and Background

Barretts Minerals Inc. (BMI) mines talc ore at the Regal Mine on private land about 11 miles east of Dillon, Montana, in Madison County, under Operating Permit No. 00013. The original operating permit was issued in 1972 and allowed mining on 2 acres of land. A number of amendments have been made to the permit since 1972 so that, at present, the permit area is 140 acres of which 80 acres are approved for disturbance. Mining has disturbed 62 acres to date.

BMI has proposed a life-of-mine expansion intended to develop the talc deposit that extends north of the existing pit. The expansion would disturb another 63 acres for a total disturbed area of 143 acres. The permit area would increase to 153 acres. The new disturbance would increase the size of the pit and waste rock dumps. A pit dewatering system would be built and operated. The existing Sweetwater Road through the mine site would be realigned. There would be no major change in the mining rate, mill production, or employment level, but the life of the Regal Mine would be extended by about 15 years, and BMI's total operation would be extended to about 30 years. The Draft and Final Environmental Impact Statements (EIS) examine the impacts of the proposed expansion and alternatives.

The Montana Department of Environmental Quality (DEQ) must decide whether to permit the life-of-mine expansion. If the expansion is approved, DEQ must decide which alternative to permit and what mitigation measures to impose on the operating permit to reduce environmental impacts. The decision is documented below.

II. Decisions

After considering the proposal, issues, alternatives, potential impacts, and management constraints, DEQ has selected the alternative known as **"Agency Modifications to the Proposed Action"**, or simply, **"Agency Modifications"**. The **Proposed Action**, as modified by DEQ, is approved for implementation as described in this Record of Decision (ROD).

Mitigation measures to reduce environmental impacts and to improve the potential for long-term reclamation success will be stipulated to Amendment 004 to the operating permit before this decision can be implemented. This approval is given under the authority of the Metal Mine Reclamation Act (MMRA). The **Proposed Action** and the **Agency Modifications** are described in detail in **Chapter 2** of the **Draft EIS**.

III. Amendment 004 Stipulations

Stipulation 013-004-01: If new springs or seeps associated with the percolation basins are identified, they must be added to the water monitoring program. Flow rate and water quality must be monitored weekly at these locations until flow rate and water quality are adequately assessed and DEQ agrees that the monitoring frequency can be reduced to monthly intervals. Results must be provided in the annual report to DEQ.

Rationale: This stipulation will ensure that, if the percolation ponds begin discharging to surface waters, water quality will meet standards. A Montana Pollutant Discharge Elimination System (MPDES) permit may be required if new springs or seeps reach state waters.

Stipulation 013-004-02: For the pit water disposal system, BMI must submit a design for leak detection and automatic shutoff, along with collection sumps, for the pipeline.

Rationale: In the event of a pipeline leak or rupture, water would be prevented from entering, and possibly polluting, surface water. Erosion from a pipeline leak or rupture discharge would be minimized.

Stipulation 013-004-03: If the pumping rate of the dewatering wells exceeds 1000 gpm, BMI must submit to DEQ, for review and approval, a plan to handle the excess water.

Rationale: The percolation ponds were designed based on the most likely expected flows according to groundwater characterization studies. The ponds may not be able to infiltrate flows at higher rates.

Stipulation 013-004-04: If groundwater drawdown due to pit dewatering dries up the office well, replacement with a dewatering well will be permitted.

Rationale: This stipulation will ensure that water is available at the mine office and facilities area, if the cone of depression dries up the shallow office well. BMI would have to secure a water right for the well for this use, if they use more than 35 gpm or 10 acre-feet per year.

Stipulation 013-004-05: Revegetated areas must be irrigated with the pit sump water during the growing season at a rate not to exceed 35 gpm or 10 acre-feet per year.

Rationale: Pit sump water is expected to have a high nitrate content. Using this water to irrigate revegetated areas should improve reclamation success and prevent potential nitrate problems at the percolation pond area. This level of use would not require a water right.

Stipulation 013-004-06: The coarse fragment content of soil salvaged for reclamation of steeper slopes must be at least 25 percent by volume as identified by samples on a 100-by-100-foot grid after application. If sampling indicates that coarse fragment content is less than 25 percent, BMI must submit for review and approval a final design for additional slope breaks and erosion controls, such as benches and cross-slope talus features.

Rationale: Rock fragments reduce erosion potential. Precipitation and snow melt water also infiltrates more rapidly into soils with a high volume of coarse fragments. This reduces erosion on steeper slopes. If the coarse fragment content of the soil placed on steeper slopes is less than 25 percent, the required slope breaks or other erosion controls will help route runoff water from long waste rock dump slopes and stop sheet erosion on upper slopes.

Stipulation 013-004-07: Pit inflow monitoring must be added to the **Water Resources Monitoring Plan.**

Rationale: Pit inflow monitoring information will be used to verify the results of pit inflow and water quality modeling. If water moving out of the pit lake into the groundwater does not meet groundwater quality standards, a mixing zone would have to be designated.

Stipulation 013-004-08: BMI must submit a final design for the final pit access ramp to provide shallow water areas for aquatic habitat. The ramp must be sloped at 8 percent in the zone of pit lake water level fluctuation to maximize the littoral zone (the zone between high and low water marks) available in the post-mine lake.

Rationale: A large littoral zone along this ramp will enhance aquatic habitat by providing some shallow areas in the relatively deep small lake.

Stipulation 013-004-09: BMI must start reclamation of the pit as soon as mining ceases and not wait for the pit lake to fill.

Rationale: This will speed up the final reclamation process for the pit above the ultimate lake surface by up to 3 years.

Stipulation 013-004-10: BMI must submit an alternative design for DEQ, Madison County, and the landowner's review, before the waste rock dump is expanded in the area of the public road, to move the Sweetwater Road to at least 50 feet from the pit to minimize the potential risks of trespass to the pit and the risk to public safety due to pit wall raveling.

Rationale: Placing the road away from the edge of the pit will minimize the potential risks of trespass to the pit and the risk to public safety due to pit wall raveling.

Stipulation 013-004-11: Waste rock must be placed on the upper pit walls on the Sweetwater Road side of the pit at closure.

Rationale: Waste rock placed on the upper pit walls will enhance pit wall long-term stability in that area, protecting the road and the public from post-mine safety hazards due to pit wall slumping and raveling.

Stipulation 013-004-12: BMI must submit a final design for a fence to control trespass and a safety berm on the pit side along the Sweetwater Road to limit visibility and access into the pit by the public.

Rationale: This stipulation is designed to protect the public by keeping people away from the pit edge and pit lake.

Stipulation 013-004-13: BMI must submit an interim reclamation plan for DEQ approval for all disturbances associated with the dewatering wells, pipeline, and percolation ponds.

Rationale: This stipulation will help control noxious weeds during mine operations on areas disturbed by the water disposal system.

Stipulation 013-004-14: The pipeline must be left in the ground at closure. Only inlet and outlet areas and any pump stations or other surface exposures of the pipeline will be removed at closure.

Rationale: Re-disturbance of the pipeline corridor at mine closure would retard final reclamation and set back operational weed control efforts.

Stipulation 013-004-15: BMI must report all asbestiform minerals sampling results to DEQ in the annual reports.

Rationale: DEQ needs to track monitoring results at least annually to ensure BMI's sampling plan is adequate.

Stipulation 013-004-16: BMI must implement continuous streamflow monitoring in Hoffman and Carter creeks to help identify potential impacts from pit dewatering on local stream flows. Monitoring information must be provided to DEQ in the annual water resources monitoring report. A summary report of the flow data must be provided annually to the local ranchers who may be impacted.

Rationale: Continuous monitoring of the streams will help identify impacts to stream flow over the years.

Stipulation 013-004-17: BMI must receive approval for the design and construction of the Sweetwater Road underpass tunnel to ensure the tunnel meets Madison County road standards.

Rationale: The underpass tunnel below the haul road could create a public safety hazard if not designed properly.

Stipulation 013-004-18: In the bond calculations for the Regal Life-of-Mine Expansion Plan, DEQ has not bonded for complete reclamation of the waste rock dump assuming that BMI would reclaim portions of the dump concurrently during operations (See page 2 of 8 of the bond calculations). BMI must comply with the concurrent reclamation as proposed in the reclamation plan or the bond would be increased accordingly.

Rationale: Concurrent reclamation must be conducted or the bond would be inadequate if the State of Montana assumed the reclamation liability.

Stipulation 013-004-19: BMI must construct the open pit in accordance with the approved plan as described in the Call and Nicholas pit design report to prevent wedge failures in the pit.

Rationale: Pit wedge failures could occur increasing the risk of injury to mining personnel if the pit is not constructed according to the design report.

Administrative Stipulation 013-004-20: BMI must provide replacement pages to the Regal Life-of-Mine Expansion Plan operating permit amendment application document, incorporating all stipulations as part of operating permit requirements.

Rationale: Incorporation of the stipulations into the operating permit document makes them an enforceable part of Operating Permit 00013.

Administrative Stipulation 013-004-21: BMI must update the Regal Life-of-Mine Expansion Plan document to include commitments made during the completeness review process, the bond calculation process, and changes made in the **Agency Modifications to the Proposed Action** in the Environmental Impact Statement by the date of the first annual report after Amendment 004 approval.

Rationale: The completeness review process, bond calculation process **and Agency Modifications to the Proposed Action** in the Environmental Impact Statement have resulted in the need for the Regal Life-of-Mine Expansion Plan document to be corrected to reflect the changes made since the permit amendment application document was submitted. These changes on replacement pages would remove any outdated information and make the operating permit document more enforceable.

IV. Implementation

This decision is effective upon signing of this ROD. BMI may implement surface disturbing activities following submittal of the reclamation performance bond to DEQ and following issuance of the MMRA operating permit amendment approval form.

A. Other Rights and Permits

Approval of the permit amendment does not convey or create any real property rights or use rights.

BMI's Storm Water Pollution Prevention Plan (SWPPP) was approved under General Discharge Permit for Storm Water Authorization MTR300136.

BMI holds Air Quality Permit #3086-00 for the Regal Mine.

The U.S. Army Corps of Engineers has determined that a Section 404 Permit pursuant to the Clean Water Act is not needed.

BMI is responsible for obtaining any property rights, easements, mineral rights, or water rights necessary to implement the operating plan amendment. BMI is responsible for obtaining any other local, state, or federal permits, licenses, or reviews that might be necessary to implement the operating permit amendment.

During implementation of this decision, BMI may propose waivers, exceptions, or modifications to the mining and reclamation plans and associated stipulations or conditions. Such changes could be appropriate to allow the use of alternate mitigation methods that might be developed in the future, or to respond to an improved understanding of site conditions gained through operational experience.

Any proposed change to the operating procedures, schedule, reclamation design, or mitigation measures will be reviewed by DEQ and accepted if the change would provide resource protection equal to or greater than the original requirement, and would not result in significant impacts not identified in the EIS. Proposed changes that would not achieve the same level of resource protection, or would result in previously undisclosed significant impacts, would require supplemental environmental analysis prior to determining their acceptability.

B. Reclamation Bond

A reclamation bond is to be posted and maintained in an amount that would enable DEQ to implement the reclamation and other plans as stipulated above and in prior amendments should BMI be unable or unwilling to do so. The reclamation bond may be posted incrementally or released to reflect stages of mine development and performance of concurrent reclamation, but will always remain at an amount adequate to pay for the reclamation of any disturbance that might exist.

The bond is reviewed once a year by DEQ as part of an annual bond oversight process required by the Metal Mine Reclamation Act (MMRA) 82-4-338, MCA. The entire reclamation cost estimate will be reviewed and adjusted by DEQ at least every 5 years to account for changes in reclamation costs and inflation as required by the MMRA. The public will be notified of the results of the 5-year bond review process and any proposed bond releases and provided the opportunity to comment. The reclamation bond does not represent the limits of BMI's liability should actual reclamation performance fail to meet the requirements in the reclamation plan or comply with environmental laws.

In complying with the full extent of MMRA, Section 82-4-338, a reclamation bond has been estimated for the Regal Mine reclamation. Based upon the information submitted, the bond has been estimated at $2,778,300.00. Interest or indices used to calculate the bond amounts necessarily change with time. Therefore, any bond amounts used in the ROD are subject to change over time.

This bond estimate has been prepared for the selected alternative (See attached Bond Summary Sheet). Provisions in the stipulations are included as line items and contingencies within the bond as needed. Supporting details of the bonding summary are available from DEQ. Line items prepared by the DEQ to determine the total amount of the surety bond required are not limitations on how the DEQ may spend any of the bond proceeds paid by the surety.

This bond estimate has been divided into specific items that include:

(1) **Reclaim Waste Dump** includes recontouring the waste rock dump slopes and top, hauling and spreading soil, and establishing vegetation, spraying weeds and doing erosion control and repairs.

(2) **Reclaim Open Pit** includes regrading areas as needed, hauling and spreading soil, and establishing vegetation, spraying weeds and doing erosion control and repairs on some areas around the pit. The bond also covers blasting slopes to make talus slopes in designated areas as shown in the EIS.

(3) **Reclaim Roads**. The Sweetwater Road would remain at closure. The underpass tunnel would be removed. The temporary Sweetwater Road would be regraded, soiled and seeded.

(4) **Reclaim Facilities** includes demolition and disposal of office and shop buildings and foundations, fuel tanks and petroleum wastes, and reclamation of facilities areas by regrading, soiling and establishing vegetation, spraying weeds and doing erosion control and repairs.

(5) **Miscellaneous** reclamation costs include removal of pit dewatering systems and reclamation of the disturbances and reclamation of other miscellaneous disturbances in the mine area. The bond also covers the waste rock dump slope erosion control systems, and water resource monitoring costs for 5 years.

(6) **Interim Maintenance and Shutdown** costs have been calculated to hire one person with a pickup to check the site over a 1-year period until the bond can be secured. Bond is included for miscellaneous expenses such as water monitoring, vehicle repairs, and fence repair.

(7) **Site Management during Reclamation.** DEQ estimates the reclamation will take one year. The agency would hire a third-party engineering firm to assume site management responsibilities. The bond costs include labor, power, insurance, taxes, leases, vehicles, computers, etc.

Other costs associated with the reclamation of the Regal Mine include mobilization (5%), engineering design (5%), agency administration (10%), and inflation (3% over 5 years, or 16%).

Total Estimated Reclamation Cost $2,778,300.00

As noted above, BMI may not implement the decision until it has submitted this bond and received Operating Permit 00013 Amendment 004. Bond release may be requested incrementally by BMI as completed activities meet the reclamation standards outlined in MMRA. When bond release is requested, DEQ will evaluate the request and solicit public comment as required by Section 82-4-338, MCA, prior to making a decision.

V. Issues and Alternatives

The EIS and this ROD have been prepared in response to BMI's application and issues and concerns identified through public comment. An alternative was developed to address significant issues. These issues and the alternative are summarized below and presented in detail in the Draft EIS. The preferred alternative identified in the Draft EIS is the Agency Modifications to the Proposed Action. This alternative has also been selected for implementation following preparation of the Final EIS. This decision took into account the impacts of the alternatives as well as public comment and the potential for the alternatives to resolve the issues.

Public Scoping and Comments

A news release announcing the public scoping meeting was issued on February 15, 2000. The public scoping meeting was held in Dillon on March 1, 2000. About 25 people attended.

The Draft EIS was released December 19, 2000. The Draft EIS presented three alternatives, including the no action alternative, BMI's proposed action, and the preferred alternative. The Draft EIS disclosed the affected environment and the environmental consequences of each alternative.

A public hearing was held in Dillon on January 11, 2001, to receive oral comments on the Draft EIS. About 28 people attended the hearing. The public comment period ended on January 20, 2001, but comments were received until February 13, 2001.

All comments were reviewed and considered during preparation of the Final EIS. Comments that presented new data, questioned facts or analysis, or raised questions or issues bearing directly on the alternatives or environmental analysis received a response in the Final EIS. Comments expressing personal opinions were considered but drew no response.

A. Issues and Alternative Development

Appendix A of the Draft EIS describes the issues raised by agency specialists and the public. Significant issues that received detailed study are described in **Chapter 2** of the Draft EIS and are summarized below.

Issue 1. Water Quality and Quantity

The mine pit would extend below the water table. To keep the pit dry during mine operations, dewatering wells would pump groundwater continuously, and the pumped groundwater would be allowed to infiltrate back into the ground in percolation ponds. Flows in nearby springs and in Hoffman Creek and Carter Creek could be reduced during dewatering. Nitrate would be elevated in water collected from the pit sumps. This water would also be routed to the percolation ponds. Leaks from the pipeline to the percolation ponds could cause pollution of surface water.

After mining ceases, the pit would be allowed to fill with water. When the lake reaches the equilibrium level, lake water would begin to discharge to groundwater on the downgradient side. If the water doesn't meet groundwater standards, a groundwater mixing zone would need to be designated.

Issue 6. Roads

The cumulative effects on roads of traffic associated with the Regal, Dillon Vermiculite, and Sweetwater Garnet mines could be high. This issue is included in Issue 11, Public Safety.

Issue 7. Reclamation

BMI must post an adequate reclamation bond before a permit for the life-of-mine expansion could be issued.

Soil erosion must be controlled during mine operation and after the mine closes.

The technical feasibility of backfilling the pit at the end of mine life should be examined.

Issue 8. Highwall Stability

Any pit highwalls left after mine closure must be in a condition of stability that is structurally competent to withstand geologic and climatic conditions without significant failure that would be a threat to public safety and the environment.

Issue 11. Public Safety

Traffic from the Regal, Dillon Vermiculite, and Sweetwater Garnet mines together could increase wear on the roads and increase maintenance requirements. Increased traffic could increase the possibility of traffic accidents.

The location of the pit lake near the Sweetwater Road could invite trespass.

Reclamation must provide sufficient measures to ensure public safety.

Issue 12. Socioeconomics

Without the expansion, the mine's life would be shortened. The Regal Mine is an important source of tax revenue for both Beaverhead County and Madison County.

Issue 13. Asbestiform Minerals

Talc deposits have a variety of associated metamorphic minerals, which may or may not include asbestiform minerals. The Regal Mine ore has been monitored for asbestiform fiber content by BMI's in-house lab for 20 years. No asbestiform fibers have been found in the ore. Waste rock was not monitored for asbestos either in air or solid phase sampling until the summer of 2000. One mineable unit width of waste rock (150 feet long, 20 feet wide, and 120 feet thick, about 28,000 tons) with asbestiform minerals has been found in the Regal Mine.

B. Alternatives Considered in Detail

Chapter 2 of the Draft EIS describes the alternatives analyzed and the alternatives excluded from detailed analysis. The alternatives that were studied in detail are the **Proposed Action, Agency Modifications to the Proposed Action**, and **No Action**.

C. Environmentally Preferred Alternative

The **No Action** alternative is the environmentally preferred alternative. Mining would cease when the currently permitted activities are finished. There would be no new surface disturbance. The groundwater table would not be intercepted, so there would be no need for a pit dewatering system with its wells, pipeline, and percolation ponds. The Sweetwater Road would not be relocated.

VI. Rationale for the Decisions

A. Rationale for the Selected Alternative

DEQ has selected the preferred alternative, **Agency Modifications to the Proposed Action**, after considering the potential impacts of all of the alternatives. The selected alternative minimizes the adverse environmental impacts of the **Proposed Action** by imposing conditions that enhance reclamation success and public safety. Mining would be allowed to continue. DEQ recognizes that none of the alternatives, including the selected alternative, completely avoids environmental impact.

B. Selected Alternative Compliance with Legal and Policy Mandates

This section explains how the selected alternative satisfies DEQ's major statutory, regulatory, and policy mandates.

Montana Metal Mine Reclamation Act

The purpose of MMRA is to provide that the usefulness, productivity, and scenic value of mined land receive "the greatest reasonable degree of protection and reclamation to beneficial use". It also recognizes that the degree of reclamation is controlled by its practicability. MMRA requires the establishment, on a continuing basis, of vegetative cover, soil stability, water conditions, and safety conditions appropriate to the proposed post-mining land use.

At the Regal Mine, the post-mining land use will be wildlife habitat and livestock grazing. Reclamation will support this land use to a reasonable degree as required by MMRA.

Reclamation of portions of the mine complex will be performed concurrently with other mining activities as much as possible. Reclamation of each portion will be finished within 2 years after abandonment.

BMI may not depart from the approved reclamation plan without first obtaining written approval of the proposed change from DEQ.

Groundwater flow through the pit lake that will form after mining ceases will keep the pit lake from becoming stagnant.

The waste rock dumps will be regraded to a combination of slope angles that mimics the surrounding natural slopes. The waste rock dumps will be capped with subsoil and topsoil and revegetated.

The reclaimed vegetation will be a mixture of grasses and forbs. This community will have a function and general appearance similar to the surrounding natural vegetation. There will be no sanitary landfill on the mine site.

In the case of the open pit, reclamation must ensure that the highwalls are structurally stable, that the pit area will be useful to humans and the surrounding natural system to the extent feasible, and that the pit area blends in appearance with its surroundings to the extent feasible. Objectionable effluents that might form in the pit must be controlled.

Highwall stability analysis indicates that the pit highwalls will be stable as a result of changes in pit geometry proposed by BMI. Under the selected alternative, waste rock will be placed on the highwall nearest the Sweetwater Road to further protect against highwall failure. The pit lake will be used for livestock watering and wildlife habitat, and will be fenced against human trespass. Moving the Sweetwater Road away from the pit edge and installing a berm between the road and the pit will reduce the pit's visibility and help the area blend in better with its surroundings. There would be no surface discharge of water from the pit

Noxious weeds will be controlled until DEQ decides that revegetation has been successful, and the bond is released.

MMRA requires that the reclamation plan provide sufficient measures to prevent the pollution of air and water. BMI's compliance with the Montana Water Quality Act, the Montana Pollutant Discharge Elimination System, and the Clean Air Act of Montana is described below.

Montana Water Quality Act

To keep the pit dry during mining operations, groundwater will be pumped from wells and piped to percolation ponds for infiltration. Captured groundwater is not expected to need treatment before disposal. Water collected in sumps in the pit will be mixed with the captured groundwater so that the water will comply with water quality standards. During the growing season up to 35 gpm of the pit sump water would be used to irrigate the reclamation areas. The Regal Mine operation is expected to comply with the Water Quality Act.

Montana Pollutant Discharge Elimination System

BMI's Storm Water Pollution Prevention Plan (SWPPP) was approved under General Discharge Permit for Storm Water Authorization MTR300136.

Clean Air Act of Montana

BMI holds Air Quality Permit #3086-00 for the Regal Mine.

Montana Hard Rock Impact Act

The Regal Mine was originally permitted before passage of the Hard Rock Impact Act. Thus, BMI is not required to have a Hard Rock Impact Plan.

MEPA Cumulative Effects Assessment

Chapter 3 of the Draft EIS provides cumulative effects analyses. There are no related future actions under concurrent consideration that, when considered in conjunction with past and present actions, are likely to result in additional significant impacts. Should future actions be proposed which have or may have cumulative effects, additional analysis pursuant to applicable requirements of MEPA would be conducted.

Private Property Assessment Act

The stipulations described above that will be imposed in implementing the **Agency Modifications to the Proposed Action** alternative are needed to meet the requirements of law and, therefore, do not have taking or damaging implications.

VII. Monitoring and Compliance

This section summarizes the project monitoring that will be conducted. The purpose of monitoring is to ensure compliance with the terms and conditions of the approved mining and reclamation plans, to detect problems early, and to provide a basis for directing remediation of unanticipated problems.

A. Agency Monitoring

DEQ staff will conduct compliance inspections at least twice a year under the authority of MMRA. These inspections will be comprehensive mine-wide inspections. The inspections will consist of examination of disturbed areas, periodic verification sampling at water quality monitoring points, and geochemical sampling of mine products, construction materials, and reclamation materials. Revegetation will be examined annually. More frequent inspections could be conducted during periods of intense activity, or if compliance problems have been noted and corrective measures are being implemented. Additional inspections for compliance with the Water Quality Act or the Clean Air Act may also be conducted. The results of these inspections will be available in DEQ's files.

B. Operator Monitoring Reports

The following monitoring reports are required from BMI under the selected alternative. All reports will be submitted to DEQ and will be available in DEQ's files.

Annual Water Resources Monitoring Report

This report is submitted yearly and includes the results of all water resources monitoring specified in the operating plan for the entire year. This report also includes a summary of past annual monitoring results and trend analysis. The selected alternative adds to this reporting requirement the monitoring of flows and quality of any new springs or seeps that might develop at the percolation ponds, and pit inflow monitoring to verify pit inflow and water quality modeling. The selected alternative also adds continuous streamflow monitoring to the annual reporting requirements. BMI must also provide a summary of the report annually to the local ranchers.

Annual Operating and Reclamation Status Report

This is the annual report required by MMRA. The annual report describes overall mining and reclamation status. This report includes BMI's tracking of the status and progress in complying with the agency-imposed stipulations.

Asbestiform Minerals Sampling Report

The selected alternative requires BMI to report the results of asbestiform minerals sampling annually.

VIII. Appeals Process

Under Montana State law, this decision is subject to court appeal by the applicant and other parties for 90 days after issuance of the operating permit amendment. Notice of permit issuance will be published in the Dillon Tribune and the (Butte) Montana Standard.

IX. Approval

This Record of Decision is effective upon signing by the department director.

Jan P Sensibaugh

Jan P. Sensibaugh, Director
Montana Department of Environmental Quality

3/19/01
Date